UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12/21/2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date *12/21/2004*.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

Please note: The art unit listed on applications sent on or after 8/20/2007 has changed from 2609 to 2626. Examiner assigned to case still remains.

DETAILED ACTION

Drawings

1.   The drawings are objected to because the blocks the illustrated in within Fig. 3 must contain a label for consistency and clarity relevant to the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2.   The disclosure is objected to because of the following informalities: applicant

must complete Pages 1 & 11 of the specification, which pertains to the current

application and co-pendency of PCT applications. Appropriate correction is required.

Claim Rejections - 35 USC § 101

3.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4.   Claims 1-22 rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. The recitation of a serialized stream of digital

audio data is construed as a mathematical algorithm, where analysis is performed on a

bit by bit basis using windowing techniques.

Claim Rejections - 35 USC § 102

5.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6.   Claims 1, 11-14, and 20-21 are rejected under 35 U.S.C. 102(b) as being

anticipated by Lew, US 5245667 A.

Re claim 11, "extracting digital audio words", where the use of "words" is broad and construed to be part of audio data such as a recording of a voice, Lew teaches a digital audio system to process incoming digital audio signals from sources such as a compact disc and tape players/recorders (Lew col. 1 line 22-28). "From a serialized stream", Lew teaches digitally encoding and transmitting signals in a serial format (Lew col 1 line 38-51).

"Estimated bit time", a bit time is construed as the time taken to process one bit of data at a clock or multiple clock rates, Lew teaches multiple clocks not synchronous with one another (Lew col 5 line 32-42 & Fig. 3 blocks 54 and 55) where a digital interpolating filter interpolates between two incoming samples of the digital audio data so as to predict what an actual sample of audio data would be at each master sampling clock signal interval (Lew col 2 line 61-68), where prediction functions in the same manner as estimation. Lew also teaches the use of bits during digital data processing representing a user data bit, validity bit, parity bit, etc. (Lew col 1 line 51-62). A "transition window" is construed as a frame. "Transition window having a preamble sub-window" and a "data sub-window", Lew teaches audio samples encoded into a frame consisting of two subframes where each represent data from different channels (Lew col 1 line 38-51). Lew also teaches each subframe conveying additional information including a preamble (Lew col 1 line 51-62), where a preamble is a type of data window/frame.

"Sampling" data at a fast sample rate, a fast sampling rate is construed as a rate that must be appropriate for audio signals such as the standard 44.1 kHz rate for audio.

Lew teaches the AES/EBU standard where a typical sampling rate of 44.1 kHz is used (Lew col 1 line 38-51).

"Extracting plural " data words based upon "the location of each transition" relative to said preamble sub-window and one data sub-window, Lew teaches in Fig. 2 preambles providing synchronization and identification of a first or second subframe and the start of a block of frames (Lew col 4 line 54-68).

Re claim 12, "at least about twenty times faster than a data rate", the use of "at least about" is construed as having a clock-sampling rate as long as it is greater than the Nyquist rate relative to the input data. Lew teaches over sampling the incoming digital information at a clock rate six to eight times as fast as the incoming digital information rate (Lew col 5 line 44-53). Lew also teaches an over sampling clock signal, which is generated independently within DSP (Lew col 5 line 44-53).

Claim 13 has been analyzed and rejected with respect to claim 12. Claim 12 teaches the same limitations as claim 13, where a sampling rate is relative to a clock signal.

Claim 14 has been analyzed and rejected with respect to claim 11. Lew teaches audio samples encoded into a frame consisting of two subframes where each represent data from different channels (Lew col 1 line 38-51). Lew also teaches each subframe conveying additional information including a preamble (Lew col 1 line 51-62), where a preamble is a type of data window/frame. Lew also teaches clocking information for performing such decoding obtained from the subframes' synchronizing preambles and bit transitions themselves (Lew col 6 line 16-33).

Claim 1 has been analyzed and rejected with respect to claims 11 and 14. Claims 11 and 14 together provide the limitations set forth by claim 1.

Claim 20 has been analyzed and rejected with respect to claims 11 and 13. Claim 20 teaches the apparatus of the method of claims 11 and 13. Claims 11 and 13 together provide the limitations set forth by claim 20. Lew teaches conventional AES/EBU formats digital signals are decoded to reproduce signals, where AES/EBU is alias for AES-3 (Lew col 4 line 34-53). Lew teaches that serial digital data is then biphase modulated (known as a Manchester family coding scheme) before transmission in order to enable synchronization and clock extraction from the data stream itself (Lew col 4 line 34-53). Lew teaches digital signal processing circuitry with input and output capability (Lew Fig. 1 & col 3 line 55-65) as well as buffers 108 and 109 as RAM that stores the most recent samples (Lew col 8 line 24-42).

Claim 21 has been analyzed and rejected with respect to claim 14. Claim 21 teaches the apparatus of the method of claim 14. Claim 21 shares the same limitations set forth by claim 14.

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in **Graham v. John Deere Co., 383 U.S. 1, 148
USPQ 459 (1966)**, that are applied for establishing a background for determining
obviousness under 35 U.S.C. 103(a) are summarized as follows: **(See MPEP Ch.
2141)**

    a. Determining the scope and contents of the prior art;
    b. Ascertaining the differences between the prior art and the claims in issue;
    c. Resolving the level of ordinary skill in the pertinent art; and
    d. Evaluating evidence of secondary considerations for indicating
       obviousness or nonobviousness.

8.   Claims 2-4, 8, 15-18, and 22 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Lew US 5245667 A in view of Gillick et al US 4837831 A (herein after

Gillick).

Re claim 15, "first type of preamble" if extracted data words have a pair of

successive transitions, Lew teaches audio samples encoded into a frame consisting of

two subframes where each represent data from different channels (Lew col 1 line 38-

51). Lew also teaches each subframe conveying additional information including a

preamble (Lew col 1 line 51-62), where a preamble is a type of data window/frame.

Lew also teaches clocking information for performing such decoding obtained from the

subframes' synchronizing preambles and bit transitions themselves (Lew col 6 line 16-

33). Lew also teaches interpolation filters to interpolate between two successive

samples of digital audio information (Lew col 8 line 24-42) However Lew fails to teach

successive transitions relative to windows/frames. Gillick teaches five individual frames

processed to form a smooth frame, where each pair of successive individual frames 104

are averaged, to form one-second level frame 120. Thus the individual frames 104A

and 104B are averaged to form the second level frame 120A, and the individual frames

104B and 104C are averaged to form the second level frame 120B, and so on (Gillick

col 8 line 16-36 & Fig. 4). Therefore, the combined teaching of Lew and Gillick would

have rendered obvious a first type of preamble if extracted data words have a pair of

successive transitions in the preamble and the subframes / sub-windows.

Claim 16 has been analyzed and rejected with respect to claim 15. The

combined teaching of Lew and Gillick disclose preambles identifying the start of a first

or second subframe within a block separated by various bits for the user, parity for error,

and validity bit to check if an audio sample is valid or defective (Lew col 4 line 54-68). A

frame of an audio sample being defective implies the user having the option to remove

that frame rendering a gap between data frames. The combined teaching of Lew and

Gillick disclose up to five frames transitioning from various levels (Gillick col 8 line 16-36

& Fig. 4). An odd number of frames imply that amongst the pairs of successive frames,

a non-successive pair can exist with any of the other frames. Therefore, the combined

teaching of Lew and Gillick would have rendered obvious non-successive

frames/windows separated by pairs of successive frames.

Claim 17 has been analyzed and rejected with respect to claim 15. The

combined teaching of Lew and Gillick disclose up to five frames transitioning from

various levels (Gillick col 8 line 16-36 & Fig. 4).

Re claim 18, "estimated bit time derived from " stream of data, the combined

teaching discloses multiple clocks not synchronous with one another (Lew col 5 line 32-

42 & Fig. 3 blocks 54 and 55) where a digital interpolating filter interpolates between two

incoming samples of the digital audio data so as to predict what an actual sample of

audio data would be at each master sampling clock signal interval (Lew col 2 line 61-

68), where prediction functions in the same manner as estimation. The combined

teaching also discloses clocking information derived from the serial data stream ().

Therefore, the combined teaching of Lew and Gillick would have rendered obvious bit

time derived from the digital data stream.

Claim 2 has been analyzed and rejected with respect to claim 15. Claim 2

shares the same limitations set forth by claim 15.

Claim 3 has been analyzed and rejected with respect to claim 16. Claim 3

shares the same limitations set forth by claim 16.

Claim 4 has been analyzed and rejected with respect to claim 17. Claim 4

shares the same limitations set forth by claim 17.

Claim 8 has been analyzed and rejected with respect to claim 18. Claim 8

shares the same limitations set forth by claim 18.

Claim 22 has been analyzed and rejected with respect to claims 8 and 11. Claim

22 teaches the apparatus of the method of claims 8 and 11. Claim 22 shares the same

limitations set forth by claims 8 and 11. The combined teaching discloses conventional

AES/EBU formats digital signals are decoded to reproduce signals, where AES/EBU is

alias for AES-3 (Lew col 4 line 34-53). The combined teaching discloses digital signal

processing circuitry with input and output capability (Lew Fig. 1 & col 3 line 55-65).

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Lew US 5245667 A in view of Gillick et al US 4837831 A (herein after Gillick) and

further in view of Akagiri US 5490130.

Re claim 5, "preamble sub-window extends from about 1.25 times said estimated

bit time" to about 1.75 times estimated bit time, the combined teaching of Lew and

Gillick disclose audio samples encoded into a frame consisting of two subframes where

each represent data from different channels (Lew col 1 line 38-51). The combined

teaching also discloses each subframe conveying additional information including a

preamble (Lew col 1 line 51-62), where a preamble is a type of data window/frame. As

previously noted, a bit time is construed as the time taken to process one bit of data at a

clock or multiple clock rates. However the combined teaching fails to teach of a multiple

or ratio of the estimated bit time for a window length. The use of "about" renders the

numerical values to have a non-exact value and is construed as allowing for deviation of

an unspecified amount. Akagiri teaches frames lengths present during compression

having lower bit rates where a short frame length is present having clocks equal to or a

fraction of the frame length (Akagiri col17 line 36-49). Akagiri also teaches blocks

corresponding to a frame or an integral fraction of a frame having values .5 or .25

(Akagiri col line), where the numerical values taught in this claim are construed to be

about the same numerical fraction value as taught by Akagiri. Therefore, the combined

teaching of Lew, Gillick, and Akagiri would have rendered obvious sub-windows

extending in a range about equal to .25 to 1.25 times the bit time.

Claim 6 has been analyzed and rejected with respect to claim 5. Claim 5 shares

substantially similar limitations set forth by claim 6 applied to a numerical range of .25 to

1.25 times the bit time.

Claim 7 has been analyzed and rejected with respect to claims 5 and 6. Claims

5 and 6 together provide the limitations set forth by claim 7.

Claims 9-10 and 19 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Lew US 5245667 A in view of Gillick et al US 4837831 A (herein

after Gillick) and further in view of Tackin US 7180892.

Re claim 19, "estimating minimum and maximum bit window times", where a bit

time is construed as the time taken to process one bit of data at a clock or multiple clock

rates, the combined teaching discloses multiple clocks not synchronous with one

another (Lew col 5 line 32-42 & Fig. 3 blocks 54 and 55) where a digital interpolating

filter interpolates between two incoming samples of the digital audio data so as to

predict what an actual sample of audio data would be at each master sampling clock

signal interval (Lew col 2 line 61-68), where prediction functions in the same manner as

estimation. "Constructing a bit window", the combined teaching also discloses audio

samples encoded into a frame consisting of two subframes where each represent data

from different channels (Lew col 1 line 38-51). However the combined teaching fails to

disclose the detection of minimum and maximum bit window times. Tackin teaches a

voice synchronizer for optimum performance, including minimum and maximum target

holding time, where minimum and maximum times can vary.

"Identifying transitions" within constructed bit window, the "time separating a set

of successive identified transitions" is a measure of "estimated bit time", where a bit time

is construed as the time taken to process one bit of data at a clock or multiple clock

rates, in Fig. 2 preambles providing synchronization and identification of a first or

second subframe and the start of a block of frames (Lew col 4 line 54-68).

"Determining estimated bit time from a running average" of estimated bit time, the

combined teaching fails to teach a running average applied to bit times. Tackin teaches

voice and data exchange over a packet where a comfort noise estimator updates the

long running averages and decide when to transmit packets of data.

Therefore, the combined teaching of Lew, Gillick, and Tackin would have

rendered obvious the estimation of maximum and minimum bit times within a

window/frame where the bit time is found using a running average.

Claims 9 and 10 have been analyzed and rejected with respect to claim 19.

Claim 19 provides the limitations set forth by claims 9 and 10.

Contact

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Michael C. Colucci whose telephone number is (571)-

270-1847. The examiner can normally be reached on 7:30 am - 5:00 pm, Monday-

Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Richemond Dorvil can be reached on (571)-272-7332. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

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